

## Physical activity with regard to socio-demographic variables and decisional balance perceptions for exercise among university students

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### Abstract:

**Purpose:** The purpose of the study was to find out participation time in physical activity with regard to some socio-demographic variables and decisional balance perceptions for exercise among university students.

**Material and methods:** Eight hundred twenty six male and 928 female, a total of 1754 volunteer university students ( $M_{age} = 20.83$ ;  $SD = 1.64$  years) participated in this study. Demographic information form, Turkish version of International Physical Activity Questionnaire-Short Form, Habitual Physical Activity Assessment Questionnaire, and Turkish version of Decisional Balance Scale for Exercise were used to collect the required data.

**Results:** The students' participation in physical activity (total duration-hours/week) in a week was examined and the result was significantly in favor of male students when genders were compared ( $p < 0.001$ ). No significant difference was observed in the duration of physical activity between students with different levels of parental education ( $p > 0.05$ ). The rates of the students who engaged in sport activities within the previous month, with mothers, fathers and close friends participating in regular sport activities were 25.1%, 22.3%, and 36.0%, respectively. Also, the rates of the students who did not engage in sport activities within the previous month, with mothers, fathers and close friends not participating in regular sport activities were 85.5%, 84.9%, and 89.5%, respectively. Two (gender) x 3 (physical activity level) MANOVA revealed significant gender ( $p < 0.05$ ) and physical activity level ( $p < 0.01$ ) differences in decisional balance perceptions for exercise. Follow-up analysis of variance indicated gender ( $p < 0.09$ ) and physical activity level ( $p < 0.001$ ) differences in only perceived pros scores for exercise in favor of female and physically more active students.

**Conclusion:** The results of the study indicated that, it was determined that the male students' total duration of physical activity was higher than that of the female students'. Parental education level does not impose any change in the physical activity participation duration of the students. The female students and highly physically active students had higher pros scores for exercise.

**Keywords:** Physical Activity, Decisional Balance Perceptions, Socio-demographic Variables, University Students

### Introduction

It has been emphasized in several studies that the benefits of regular PA on physical, mental and social health (Kirby, Levin, & Inchley, 2011) as well as on prevention and treatment of non-communicable diseases such as obesity, diabetes mellitus, cardiovascular diseases and cancer can not be disregarded (Buckworth & Nigg, 2004; CDC, 2015; Uijedwilligen et al., 2014; WHO, 2015a). In 2009, it was explained that physical inactivity was the fourth highest risk factor for non-communicable diseases (Hallal et al., 2012; Pahkala et al., 2013). Despite the widespread information and emphasis on the positive effects of physical activity and some strategies that have been implemented in many developed countries to increase the level of PA, only one fourth of all adults complete the amount of time required for the recommended level of PA worldwide.

The recommended level of PA for children and adolescents is minimum 60 minutes moderate- vigorous PA daily, and for adults the recommended minimum PA is 30 minute at a moderate level for 5 days a week or 20 minutes of vigorous PA for 3 days a week (Garber et al., 2011). According to WHO (2010), 81% of children and adolescents aged 11-17 are not physically active at the recommended level. Also, girls were found to be less active than boys (WHO, 2015b). WHO reports (2010 data) show that prevalence of insufficient PA in the Turkish population over the age of 18 is 30-39% for women (WHO, 2015c) and 20-29% men (WHO, 2015d).

In some developed countries, strategic plans have been developed and implemented in order to lower the prevalence of inactivity (CDC, 2011; NHS Health Scotland, 2015; Public Health Agency of Canada, 2015).

Similarly, projects aimed at increasing the level of PA are in progress in Turkey. Turkish Ministry of Health has prepared and published 'Physical Activity Guidelines for Turkey' in the framework of 'Healthy Nutrition and Active Life Programme of Turkey (2013-2017)' (Turkish Ministry of Health, 2014). The same program also includes the strategy of 'Decreasing Inactivity Prevalence by 16%' (Turkish Ministry of Health, 2013). Yet, more research on the level of PA is required to develop effective strategies to reduce of physical inactivity. Research indicates that the level of PA is highly affected by demographic factors (such as age and gender), social factors (such as socio-economic status, education level of parents), socio-cultural factors (such as parents and peers interest in sport), psychological factors (such as self efficacy and self esteem) and environmental factors (such as weather, season, availability of sports free of charge) (Craggs, et al., 2011; Toftegaard-Stockel et al., 2011; Uijtdewilligen et al., 2011; Uijtdewilligen et al., 2014).

Numerous research studies show that PA decreases with age (Buckworth & Nigg, 2004; Craggs et al., 2011; Gordon Larsen, Nelson & Popkin, 2004; Kwan et al., 2012; Talema & Yang, 2000; Tammelin et al., 2003). Both the quality of physical activity and motivation for PA can change depending on age (Talema & Yang, 2000). In addition, behavior changes greatly occur during the transition stage from adolescence to young adulthood (from high school to college/university) (Gordon Larsen, Nelson & Popkin, 2004; Kwan et al., 2012). During this transition period, noticeable changes also occur in PA behavior (Gordon Larsen, Nelson & Popkin, 2004). Some studies show that PA level decreases throughout the period students graduate from high school and move on to college (Kilpatrick, Hebert, & Bartholomew, 2005; Kwan et al., 2012; Silliman, Rodas-Fortier, & Neyman 2004). Besides the transition from high school to college is a critical period for the development of a healthy lifestyle (Njororai and Njororai, 2015). PA level in young adult period can be used to estimate participation in PA in the future (Hsieh & Chen, 2013). Thus, studies on PA level of young adults have become important. Gender differences in PA levels have also been examined. Earlier studies showed that males were physically more active than females (Moore et al., 2005; Utter et al., 2006). But, Talema & Yang (2000) reported that percentage of PA decline with age is more pronounced among males than females. In addition, parental education level, parental and peer participation in PA are the other factors that affect the PA of adolescents (Craggs et al., 2011; Kirby, Levin, & Inchley, 2011). For example, Toftegaard-Stokel et al. (2011) stated that the adolescents who perceive their parents as being inactive. Thus, we intended to examine sport participation of the university students in terms of regular sport participation of parents and close friends because of the possibility of similar PA patterns in these young adults.

On the other hand, exercise adoption as a lifestyle is one of the factors increasing PA level. Positive decisional balance for exercise facilitates exercise adoption (Pinto et al., 1999). Decisional balance represents an individual's assessment of the perceived importance of the advantages and disadvantages (pros and cons) of performing a behavior (Jordan et al., 2002). An individual's perception of the relative benefits (pros) and the costs of exercise adoption (cons) are associated with exercise adoption. Studies have demonstrated that individuals who are in more advanced stages of motivational readiness for exercise report a more positive decisional balance for exercise adoption (Pinto et al., 1999). Within this context, determining how university students perceive pros and cons of exercise adoption might contribute to the development of strategies enhancing their PA levels.

Due to reasons stated above, this study has been carried out with the purposes of 1) determining the PA level of the university students, 2) examining the participation level of the students in moderate and vigorous intensity PA's with regard to gender and parental education level, 3) determining the percentages of the students engaging in sport activities in relation with the regular sport participation of their parents and close friends, and 4) examining their perceptions of decisional balance for exercise.

## Material and Methods

### Participants

A total of 1754 university students ( $M_{age} = 20.83$ ,  $SD = 1.64$  years), 826 male ( $M_{age} = 21.03$ ,  $SD = 1.68$  years) and 928 female ( $M_{age} = 20.65$ ,  $SD = 1.58$  years) university students from two state universities participated in this study.

### Instruments

#### Demographic Information Survey Form

The survey form comprises the questions of gender, age, parental education level, participation of parents and close friends in sport activities.

#### International Physical Activity Questionnaire (IPAQ-Short Form)

Turkish version of the IPAQ-Short Form was used to determine the PA level of the students. The validity and reliability of this questionnaire was studied by Öztürk (2005).

#### Habitual Physical Activity Assessment Questionnaire (HPAAQ)

HPAAQ is a self-report questionnaire, which asks participants to give their weekly average frequency and duration of PA over the last month. HPAAQ was developed by Karaca & Turnagöl (2007). In this study, sports activity index of HPAAQ which consists of the following questions was used. The first question is 'Did you engage in any sport activities in the last month for at least once a week'. If subjects have engaged in any sporting activities, they go on to answer the following questions for each activity: "Which sports did you engage in at

least once a week within the previous month?” and “How many hours per week did you usually spend engaging in this/these sports?”

*Decisional Balance Scale for Exercise (DBSE; Plotnikoff et al., 2001)*

This scale was used to measure the perceived pros and cons factors in deciding to continue and adopt exercise behavior. The scale consists of two sub-scales (i.e., pros and cons) with 10 total items. The reliability and validity data of the DBSE for Turkish university students were collected through a study conducted by Cengiz et al. (2008).

**Data collection**

The participants were given demographic information sheet, IPAQ-Short form, HPAAQ, and DSBE to be filled out in a classroom setting. The instructions on how to respond to the items in the forms were provided by the researchers conducting the study. The average time spent to fill the questionnaires was about 15-20 minutes. Participation in the study was on a voluntary basis and the responses to the self-report questionnaires were held anonymous.

**Data analysis**

Using IPAQ (2005), physical activity level of the students was classified as low, moderate, and high. Besides descriptive statistics, t test and One Way ANOVA were administered to find out the discrepancies in the total weekly participation time in PA with regard to gender and parental education level. Moreover, 2 x 3 (Female/Male x High/Medium/Low PA) MANOVA was utilized to test the gender and physical activity level group differences in perceived pros and cons scores for exercise.

**Results**

According to IPAQ (2005) classification, it was found that 18.1%, 61.2%, and 20.8% of the students in this study took part in low, moderate and high level PA, respectively.

Table 1 shows the students’ total weekly participation time in PA with regard to gender and parental education. t test results showed significant gender differences in total weekly participation time in PA in favor of the male students (p<0.001) (Table 1). There were no significant differences in the duration of PA according to the parental education level (p>0.05).

**Table 1.** Students’ total weekly participation time in PA with regard to gender and parental education

		Walking+Moderate and vigorousPA (hours/week)			
		n	M	SD	
Gender	Female	928	8.96	9.42	$t_{(1752)} = -3.55^*$
	Male	826	10.72	11.12	
Father’s education level	Primary school and lower	542	10.59	12.36	$F_{(3, 1740)} = 2.11$
	Middle school	309	8.76	8.02	
	High school	514	9.70	9.45	
	University and higher	379	9.77	10.32	
Mother’s education level	Primary school and lower	974	9.65	10.64	$F_{(3, 1731)} = 0.19$
	Middle school	304	10.14	9.62	
	High school	344	9.78	9.04	
	University and higher	107	9.94	11.97	
*p < 0.001					

Distribution of the students’ level of engagement in sport activities within the previous month in accordance with their mothers, fathers and close friends’ level of engagement in sport activities are presented in Table 2. The rates of the students who engaged in sport activities within the previous month, with mothers, fathers and close friends participating in regular sport activities were 25.1%, 22.3%, and 36.0%, respectively. Also, the rates of the

students who did not engage in sport activities within the previous month, with mothers, fathers and close friends not participating in regular sport activities were 85.5%, 84.9%, and 89.5%, respectively.

**Table 2.** The students' level of engagement in sport activities within the previous month in accordance with their mothers, fathers and close friends' level of engagement in sport activities.

Significant others' level of engagement in sport activities.		The students engaging in sport activities			The students not engaging in sport activities		
		f	%		f	%	
Doing sports	Mothers	43	25.1		128	74.9	
	Fathers	44	22.3		153	77.7	
	Close friends	125	36.0		222	64.0	
Not doing sports	Mothers	211	14.5		1247	85.5	
	Fathers	216	15.1		1216	84.9	
	Close friends	128	10.5		1093	89.5	

Table 3 represents the means and standard deviations of the perceived pros and cons scores for exercise of the students in accordance with gender and physical activity level. Two (gender) x 3 (PA level) MANOVA results revealed significant gender (Pillai's Trace = 0.004;  $F_{(2, 1663)} = 3.26$ ;  $p = 0.03$ ) and physical activity level (Pillai's Trace = 0.01;  $F_{(4, 3328)} = 4.30$ ;  $p = 0.002$ ) main effects on the scores of decisional balance for exercise. On the other hand, no significant multivariate two-way interactions were found for gender X physical activity level ( $p > .05$ ). Follow-up analysis of variance indicated both gender ( $F_{(1,1664)} = 3.07$ ;  $p = 0.08$ ) and physical activity level ( $F_{(2,1664)} = 8.06$ ;  $p = 0.001$ ) differences in only perceived pros scores for exercise. Examination of the means reveals that female and physically more active students had higher perceived pros scores than their counterparts (Table 3).

**Table 3.** Students' perceived pros and cons scores for exercise with regard to gender and physical activity level

		Female (n=888)		Male (n=782)		Total (n=1670)		
		M	SD	M	SD	M	SD	
Pros scores	PA level	Low	3.26	0.87	3.31	0.85	3.28	0.85
		Medium	3.39	0.94	3.29	0.97	3.34	0.96
		High	3.67	0.98	3.43	0.93	3.54	0.96
		Total	3.41	0.94	3.33	0.95	3.37	0.94
Cons scores	PA level	Low	1.86	0.48	1.97	0.66	1.90	0.55
		Medium	1.89	0.54	1.95	0.60	1.92	0.57
		High	1.99	0.60	1.97	0.64	1.98	0.62
		Total	1.90	0.54	1.96	0.62	1.93	0.58

### Discussion

Many studies demonstrated that PA level is related with gender, parental education levels, peer and parental involvement in sport activities as well as some psychological and environmental factors (Craggs, et al., 2011; Toftegaard-Stockel et al. 2011; Uijtdewilligen et al.,2011; Uijtdewilligen et al., 2014; Yasunaga et al., 2014). Based on these findings, we intended to determine physical activity levels of the students in accordance with gender and parental education level and their engagement in sport with regard to peer and parental involvement in sport activities. In addition, we examined perceived pros and cons scores for exercise of the students in accordance with gender and physical activity level.

According to IPAQ (2005) classification, it was found that 18.1%, 61.2%, and 20.8% of the students in this study took part in low, moderate and high level PA, respectively. Similarly, both El-Gilany et al. (2011) and Njororai and Njororai (2015) found that most of the university students are moderately or vigorously active. Also, Silva et al. (2007) reported that the rate of active and very active students was 73.3% in total. Contrary to the present study, Huang et al. (2003) demonstrated that most of the students did not meet the recommended level in PA guidelines. The reason why the rate of students who are in high PA category was higher may be attributed to the inclusion of all walking patterns (work place, school, home, transportation and hobbies) apart from sports and exercising objectives in IPAQ scoring. Almost every one of the students in the present study

spent long periods participating in sports activities as they had to do some walking for at least one of the purposes stated above.

According to ACSM, to promote and maintain health, adults should do at least 30 minutes of moderate PA five days a week or at least 20 minutes of vigorous PA a day at least for three days each week (Garber et al., 2011). In this study, it has been found that both male and female students' weekly PA durations obtained from their total walking, met the moderate and vigorous physical activity recommendation (Table 1). Male students had longer PA durations than female students. These findings were in line with the data obtained from the studies (Buckworth & Nigg, 2004; Colley et al., 2011; Finger et al. 2014; Kirby, Levin, & Inchley 2011; Moreno-Gomez et al. 2012; Öztürk, 2005; Santos, Gomes, & Mota, 2005) which found that PA level of the male students were higher than their female counterparts. This result might be explained by culture. Culture is one of the many factors that affect physical activity habits. Also, the factors that influence exercise habits or exercise barriers may be different among genders. For instance, males can spare more time for their leisure time activities or they spend more time outside than at home, while females spend more time at home or in the dormitory. Regarding the impacts of culture, household chores are generally under the responsibility of females in our country (Savaş-Gün et al., 2008). Also Turkish Statistical Institute reported that the duration which females spare daily for household chores is longer than the duration spared by men (5.28 hours/day and 0.85 hours/day, respectively) in Turkey (TÜİK, 2014). Therefore, males may have more spare time and their PA level might be longer than females. There are some other factors such as weather, unsafe neighborhood, lack of money, lack of social support, environmental access to exercise (El Ansari & Levell, 2009; Hoebeke, 2008) that may influence physical activity level in accordance with gender.

One of the determinants of the physical inactivity is the parental education level (Kohl & Hobbs, 1998; Uijtdewilligen et al., 2011). In the study conducted on adolescents between 11-17 years of age, Finger et al. (2014) reported parental education level correlated with the PA level of adolescents, especially female ones. In another study (National Longitudinal Study of Adolescent Health) on adolescents between 11-21 years of age in the USA, it is stated that the children of mothers with higher educational level have higher participation level in moderate and vigorous physical activities (Gordon-Larsen, McMurray & Popkin, 2000). Also in their study on female university students Khalaf et al. (2013) reported significant and positive correlation between the physical activity level of the students and their mothers' educational level. Similarly, Hacıhasanoğlu et al. (2011) found that the university students whose parental education levels were high had high PA scores. However, our results showed no significant differences in the walking, moderate and vigorous PA participation durations (hours/week) of the students with regard to parental education level.

Another important factor for the physical activity levels of children and adolescents is parent's influence (Kohl & Hobbs, 1998; Uijtdewilligen et al., 2011) and the other one is peer influence (Kohl & Hobbs, 1998). According to Eccles, the role of peer impact also increases together with age while the impact of parents continues on the health behaviors in adolescence period (cited in Prochaska, Rodgers, & Sallis 2002). As stated in the study of Wallace et al. (2000), peer support is a significant indicator for the PA of male college students but family support is a significant indicator for the PA of female college students (cited in Seo et al. 2009). In the current study, the results indicated that the percentage of university students engaging in sport was higher when they had close friends engaging in sport rather than having parents doing sport. In the study on PA participation of adolescence, Kirby, Levin, & Inchley (2011) stated that peer group and parental support decline together with age in both genders. Similar to our results, they reported that parental support was less important than peer influence.

As mentioned previously, positive decisional balance for exercise facilitates exercise adoption (Pinto et al. 1999). In the present study, our results indicated both gender and physical activity level differences in perceived pros scores for exercise. Female and physically more active students had higher perceived pros scores than their male counterparts. The students in the high active category had higher positive factor scores for doing exercise when compared with the students with low activity levels. In other words, highly active students believe in positive results of doing exercise. Similarly, Cardinal et al. pointed out that the perceived pros scores of the individuals who do medium to high level of exercise are higher than the individuals in inactive groups (cited in Miçoğulları et al. 2010). This finding shows the necessity that some intervention strategies for changing perceived negative factors to positive for exercise should be developed. This information may be used as a guide to intervene in order to change exercise behavior.

## Conclusion

To sum up, it has been concluded that the total weekly participation durations of male students' walking, moderate and vigorous physical activities are higher, that parental education level does not impose any change on the duration of PA participation of the students, that physically more active students had higher perceived pros scores for exercise, and that the rate of students who had close friends engaging in sports was higher in sports activities than that of those whose parents were involved in sports. Some limitations of the present study should be addressed. The first limitation was the cross-sectional design of the study and another one was the self-reported physical activity measure. Within the limitations noted, the strength of this study is that it has a large sample size and examines physical activity levels of the university students in terms of some socio-

demographic variables when compared with the other studies in Turkey. The public health institutions may benefit from the findings of this study with the purpose of taking precautions to increase PA levels of young people and developing intervention strategies (determining the target groups, raising awareness of the parents and young people and etc.).

One of the periods in which PA level drastically declines in relation with a striking decline in moderate and vigorous physical activities is the transition period from adolescence to young adult period (Gordon Larsen, Nelson & Popkin, 2004; Kwan et al. 2012; Nelson et al. 2006). Some studies stated that PA decreases during the transition from high school to university (Kilpatrick, Hebert, & Bartholomew, 2005) and this condition is more apparent in male students (Kwan et al. 2012). However, in our country, due to the fact that university entrance system requires a long and intense preparation period for students, it can be considered that this condition may be different. That's why it is recommended that future research use longitudinal design to examine PA patterns from childhood to young adulthood, especially during the transition from adolescence to young adult period. Also future studies should focus on some factors that may influence physical activity levels such as culture, health problems, unsafe neighborhoods, lack of social support, environmental access to exercise etc.

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